the CANNON

The University of Toronto Engineering Society

Vol.V No.5

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CHECK OUT SURPLUSTRONICS INC. AT 310 COLLEGE STREET

the CANNON

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THE CANNON is a publication of the University of Toronto Engineering Society. It is published monthly to announce Eng. Soc. events, discuss Faculty and University matters, and present technical information of interest to Engineering undergraduates. Subscriptions are available, call Ella at 978-2917. Anyone interested in helping with THE CANNON is most welcome.

THE CANNON encourages submissions; please type or write legibly. Deadline for articles is one week before publication date, notices and letters by 5:00 p.m. the Friday prior to publication. Comments on THE CANNON or articles appearing in it are appreciated. The editors reserve the right to edit letters for brevity.

ISSN 0711-4370

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Editor's Notes

It is often difficult to imagine the many activities going on in the Faculty of Applied Science and Engineering, let alone the entire University. There are over 15 campus newspapers published and a multitude of newsletters, all encouraging people to attend various seminars or events or informing them of internal activities. In this issue of the Cannon there are articles ranging from highly technical to purely social interest.

The new Microelectronics Centre being set up under the auspices of the University is an exciting chance for our professors, researchers and keen students to work and become leaders in a field of vital importance to today's electronic society.

Last year when it was proposed that professors and graduate students partake in an exchange programme with the King Saud University in Saudi Arabia there was heated debate within the faculty and protest from various groups on campus. However, a year later there is not much that has been said with regards to this intellectual exchange, and so we decided to investigate.

There are also many events coming up in which you can be involved directly. Professional Development chairman, Brett Calder, has organized an interesting panel discussion for late January which deals with the problem of choosing between engineering or management career directions.

Though the frosh have access to new and wonderful computing facilities, a disproportionate number of students (all upperclassmen) must suffer with the old batch processing system. The possible replacements for this archaic system are discussed on page 6.

Recovering from that cruel month known as December, and final exams, is not easily accomplished over a mere 13 days of gluttonous behaviour. So, for those of you looking to party on... Godiva Week is next week. Yes, if you are in search of an excellent excuse to avoid starting this term's work there are many events being held every day during the week. An entire five days of *PURE FUN*. You could not ask for anything else to start off the term in the right frame of mind.

See you there

THE CANNONBALL

SATURDAY, JANUARY 29

INN-ON-THE-PARK

$38

Tickets from Ella at the Eng. Soc. Offices

New Microelectronics Centre for U of T

Access to High Technology

Judith Vosko
Eng Sci 8T4

What's compact, inexpensive, reliable and durable to a greater extent than all it's predecessors? It seems unbelievable but the new technology for very large integrated (VLSI) chips combines all these features. Even better news is that a new development centre for microelectronics (ME) associated with U of T will open soon.

Officially referred to as the University of Toronto Microelectronics Development Centre, this new body is to be a separate entity owned by the University but divorced from the usual university function. The centre will deal with U of T on a business-like basis but will be required to submit an annual report to the University. This will benefit both organizations since the ME centre will not be hampered by U of T bureaucracy and the University will not be forced to take on any liability for the centre. In the same manner as a private company, the ME centre will have to pay the University for all the facilities it uses. The payments will be either in the form of money or the granting of access for U of T researchers to the specialized equipment that the centre will purchase. The initial funding for the project comes directly from the federal government Department of Industry, Trade and Commerce (ITC) and U of T will not be making any monetary contribution. This centre is one of at least six similar organizations to be established in association with different universities nationwide.

The mandate for these centres is to help industries to incorporate ME in a variety of products and processes. In order to raise additional funds, enabling the centre to be self-sufficient after the government seed money has been spent, the work will be performed on a fee-for-service basis.

At the present time there are three Electrical Engineering professors heavily involved in the setting up of the centre. They are Professor A. Sedra, Prof. C.A.T. Salama and Prof. Z.G.Vranesic with Prof. Sedra serving as Executive Director. In addition Dean Slemon has been guiding the process of negotiating a contract with ITC. It is envisioned that the centre will employ 2 or 3 electrical engineering professors on a part-time basis plus a full-time engineer and support staff, once it is operating fully. Preliminary work has begun and it is hoped eventually the centre may be in a position to offer research contracts to U of T researchers.

Integrated Circuit Emphasis

The Department of Industry, Trade and Commerce has emphasized that each of the centres it is setting up is intended to develop solutions to specific, domestic engineering problems using new ME technology. According to Prof. Sedra the U of T ME centre will be involved in high technology work due to it's location in an area where many industries are already utilizing microelectronics. The field of concentration of the centre will be custom and semi-custom integrated circuits.

The custom and semi-custom VLSI circuits are designed to replace a circuit board containing many medium and large scale integrated circuits with a single chip. This process serves to save space, increase reliability and gives the client the competitive edge of having a proprietary circuit package which cannot be easily copied.

The first step for the centre will be to enter the semi-custom field. This process involves the use of gate arrays which are groups of between 400 and 4000 unconnected logic gates. According to the specifics of each application, the connections between the gates are then added to the semi-custom chip.

The first requirement of this ME centre is a computer-aided design (CAD) facility. Two major steps in the design process involve the use of the CAD capability. After a customer presents the centre with a logic circuit which it wishes to reduce to a single chip, CAD will be used to simulate the circuit to assure the required task will be performed correctly. The use of a computerized technique at this stage allows the non-idealities of the components to be considered, which is difficult with other modelling methods. Each chip is composed of only 2 or 3 layers of semi-conductor material so that it is essential to find the best means of connecting gates without any connections crossing. The CAD facility will be a great aid in solving this problem referred to as the automatic layout routing problem.

The other requirements of the ME centre will be metallization equipment. This equipment will have the ability to make the necessary connections between dedicated gate arrays on semi-custom chips and to encapsulate these chips to complete the manufacturing

continued on page 15

Suffering with Keypunches

Facilities Grossly Inadequate

If Time Magazine thought that 1982 was technically the year of the computer, then 1983 will be the year of the slide rule at U. of T. Engineering students can look forward to yet another year of computing on the ancient High Speed Job Stream (HSJS).

The Engineering Society has been taking a very close look at the computing situation in the faculty, with Eng. Soc. president Wayne Levin meeting with the outgoing Computing Services director and the U of T vice president of planning to find out what is going on.

What *is* going on? A brief overview of what we're using now will put things in perspective. Engineering students basically are using two separate and totally different computer facilities. First year students are learning their computing on a VAX computer that is owned and operated by the faculty. Second, 3rd and 4th year students use keypunches at the Engineering Annex on the HSJS, owned and operated by U of T Computing Services (UTCS).

The first year facilities are new to engineering, and their first term of use appears to be a success. However, the frosh of this year will probably have to face the lineups at EUT next year because the current VAX system can only support the first year course load.

The facilities in the Engineering Annex are universally known to be inefficient, overloaded and miserably out of date. We know it. The Faculty knows it. The computer centre knows it. The university administration knows it. The fact that we are at the top university and using such junk is downright embarassing.

So, you ask, if everybody knows about it and admits that there is a problem, what's being done about it? The answer is- not much. UTCS has no plans to get rid of the EUT and replace it with an up to date online system instead of the current batch style of computing. The fact that UTCS has a new (Jan 1/83) director is no help because we can be sure that until he settles in to the new job no major decisions will be made, and that means nothing for the 1983/1984 academic year.

New VAX for APSC?

The Faculty is taking a different approach and is trying to get a second VAX computer and 100 terminals for installation this summer. Together with the current VAX, these two computers would provide computing service for all undergrads beginning next fall. Sounds great until you dig a little deeper.

The university administration has 'promised' the engineering faculty that they will give us this second VAX this summer. Talk, of course, is cheap, because they refuse to put this in writing. Also, the VAX that we are to supposedly receive is not a new computer, but one that is already at the university. This is where the plot thickens.

There are 3 possible VAX's that engineering can get and these belong to Scarborough College, Erindale College, and UTCS. The Scarborough College VAX is a model 750 and is too small. The other two VAX's are both model 780's, the type the faculty wants to get. Erindale has a four year contract with UTCS for their VAX and are definitely unwilling to part with it.

This leaves the VAX that belongs to UTCS, but this VAX is connected to the VAX at Erindale and handles all the communications for Erindale's VAX when it talks to all the other UTCS computers. That contract that Erindale has includes the UTCS VAX. Well, with all the possibilities accounted for, the only alternative is to buy a new one. The only hangup is that a new VAX with disk drives, tape drive, printers, and the other peripherals needed to run it is very expensive.

So now we can conclude that if the administration keeps their word, they'll be buying APSC a new VAX in a couple of months (don't forget delivery and installation time). Don't hold your breath, because nobody has that kind of money.

This is a good time to get a little hot under the collar, and with obvious good reason. Frosh probably won't understand until next fall when they find out what happens when two or more courses have an assignment due on the same day. The keypunch room just wasn't made to take over 100 people at once.

Staff Cutbacks

Upper classmen are probably wondering why UTCS cut back most of their services at the Annex. Last year there were 6 full-time staff and a dozen or so advisors working 7 days a week. This year, there is one operator working Monday to

continued on page 12

Win Chance to Study Abroad

Imaginations Take Note!

Brett Calder
Ind 8T3

Once again U of T engineering students have been given the opportunity to test their entrepreneurial and engineering skills and compete against students in high schools, community colleges and undergraduate engineering programmes from across Ontario in the second annual Technion Science Fair, to be held at the Ontario Science Centre, April 27 through May 1st.

Last year's Technion Science Fair was a great success - sponsored by the Technion Society, Toronto Chapter, the Technion Science Fair gives recognition to the young people of Ontario who actively pursue interests in applied science and technology, and to help them develop thse talents and skills. For instance the first prize winner John Young (age 15 - Michael Power H.S.) was awarded a month of travel and study at the Technion (Israel Institute of Technology) for his exhibit *Terracology* - an investigation into enhancing an airfoil's characteristics. And because the Science Fair receives wide media attention, the public benefits from an increased awareness of science and technology.

The competition itself covers the very broad field of applied science and technology, which would not preclude thesis topics or CED projects.Also past and present CED and OEDC competitors are encouraged to enter. Last year saw two U of T entries (Lewis Kaiserseider whose Automatic Control Valve went on to win the OEDC; and Gus Rinella whose 'hypertrike' took 1st runner-up at the Technion Science Fair). This year we hope to see more U of T entries competing for the host of prizes, which include a trip to Israel and an Apple II microcomputer.

You should note that the date for the competition coincides with the tail end of exams. *Don't panic.* The Technion Science Fair recognizes this and arrangements will be made, as far as possible, to accommodate the needs of individual students so as not to defer from participation. Also, students interested in applying should do so as soon as possible. For more information and applications contact:

Debra Eklove
TECHNION SCIENCE FAIR
2828 Bathurst St.,Suite 603
Toronto
M6B 3A7
Tel. 789-4545

January

Sunday	Monday	Tuesday	Wedns
2	3	4	5
9	10 *Resurrection of Godiva* *12:15* *Fluid Flow Lab* *5p.m.*	11 *Gang Bang* *12:15* *Monty Python revival* *7p.m.*	12 *Hard Hat Day* *Chariot Race* *12:15* *Blues Hockey* *Associated A* *7:30p.m.*
16	17	18	19
23 30	24 31	25 *Engineering vs. Management* *Lunchtime Discussion*	26

sday	Thursday	Friday	Saturday
			1
	6 *Toike Oike Make-up*	7 *Pub*	8
me and ties	13 *Burlesque Gong Show 12:15 p.m. Common Room Marathon and Smoker 5p.m.*	14 *E.A.A. Ski Day Osler Bluffs Godiva's Burial Godiva's Wake at Wetmore Hall*	15
	20	21 *Pub*	22
	27	28 *Pub*	29 *Cannonball*

Party, Party, Party

Godiva Week is Here

Welcome back to another term at good ol' Skule. After a good scare during exams, too much turkey over the holidays and a number of resolutions at the New Year, I'll just bet that you are ready to settle into some serious work in the spring of '83. For some of us, one of our resolutions was exactly that- I'll never walk into exams again having just taken two days to learn the textbook. But...

Before the serious work gets too heavy for those poor backs it's time for the 1983 version of bad, crazy times at the University of Toronto - commonly referred to by knowledgeable engineers everywhere as 'GODIVA WEEK'.

This year, continuing the frivolity started by our Vice-President, Peter Weick, the present Blue and Gold Committee of your Engineering Society has a line up of events that include the traditional, the sublime, possibly even the ridiculous. We have a few new twists for you too. The following is a brief layout of the week's events that we hope you will participate in actively or as a spectator. Remember this is your week to let it all hang out; when the rest of the campus locks up anything that is not screwed down and calls in the 'Riot mice' just in case the Artsies try to emulate our nefarious activities - all fun, of course.

So without further ado...let the bells ring out and the banners fly, it's too good to be true, but it's here - GODIVA WEEK '83.

The week opens on Monday, January 10th with Godiva's Resurrection which will take place at 12:30 in front of the main entrance to the Sandford Fleming building. This is where the 'spirit' of Lady Godiva of Canterbury fame will be pleaded with to arise and give her blessing to the week's festivities. The invocation will be aided by the BNAD, the BFC and as many Skulemen and women as possible. Monday night at 5p.m. sees the ever popular 'Fluid Power Dynamics' seminar. The location will be announced and a limited number of 'demonstrators' are needed in groups of five; male or female. There will be a $15 lab fee per group to cover materials and expenses. All groups should register with Ella at the Engineering Society office by Monday at 2p.m. The demonstrators should meet with their supporters wishing to take the seminar in the Sandford Fleming cafeteria at 4 p.m. This promises to be as popular an event as in past years, and left over materials after the demonstration will be distributed to the participants.

Tuesday, January 11th opens with Day 2 of Godiva Week. 'Knock, knock. Who's there? Who cares? It's time for the Gang Bang' This is the time when the Mighty Skule Cannon roars to its challenge across the Front Campus around 12:30 daring any interlopers to utter a response. This year the challenge may or may not be answered by those scurrilous knaves at Ry High, Devo House or the Uma Gumas (?). Come on out and cheer on the symbol of engineering at the U of T -the best school of engineering in the country. Note: Any pseudo-engineers from that hick university (ha) down the pike in Waterloo had better stay under their rocks, because if they have any funny ideas... well, they might find all they collect are contusions, bruises and multiple internal injuries. That evening, we present a 'Monty Python Revival' in the Sandford Fleming lecture hall (SF 1105) where we will be showing a double feature of Monty Python movies (you expect Hank the Peanut?). There will be a nominal admission charge of $2 to cover expenses. The show begins at 7p.m. which will ensure that no one misses the last bus or train after the movies. 'Ere there's a penguin on the tele. A penguin?

Wednesday, January 12th dawns with something a little different, as well as something traditional. First of all, with very few exceptions most of our hardhats stay tucked away collecting dust in a closet after that first frosh orientation. Well, we are starting a new tradition at Skule- Hard Hat Day. This is your chance to bring out the yellow monster and say to the rest of the campus that you are proud to be an engineer. We've heard that we are something else from different sources so it is about time that we say something about ourselves, so dig out your hard hat and wear it proudly on Hard Hat Day. At 12:15 on this day, it's the n'th running of the Skule Chariot Race on the front campus. This is one event not to be missed. This competition should be as good as ever -even the Eng Sci's have promised to enter a legal chariot. But the question on everyone's lips must be how the 8T6 frosh will top the 8T5 chariot with it's female rider, Rhea Plosker, who almost stayed on all the way around the course. So, come and yell for your department's entry in the fight for Pott's trophy.

Provided that there are survivors after the Chariot Race, Hard Hat Day continues with the 'Blues and Brews' Hockey warm-up at Sandford Fleming cafeteria running from 4 to 7 p.m. Beer will be on sale for $1 but those with tickets to the Blues hockey game against Western will get their first beer free. Tickets for the game will be available through your class rep, Ella at the Eng. Soc. office

or June in the Stores for $1.25 which is reduced especially for engineers from the regular price of $2 for this game only. At this pub will be the hard hat judging competion with prizes by Labatt's. Judging will be based on originality, best theme representation and audience response and will be handled by a panel of semi-celebrity judges. So, frosh, make the final touches to your hard hats and all upperclassmen come and see these pieces of engineering art history and help to baptize the poor things. Also, there will be a banner competition with prizes from Labatt's. These should be made with the Varsity Blues Hockey Team and the tremendous support Skule shows kept in mind. These banners will be displayed all day in the cafeteria and hallways near the stores and then taken to be hung in Varsity arena for the game. Let's ensure that the Blues know we are behind them against the Western Mustangs by a good show of support in the banners.

Finally, Hard Hat Day ends with the Blues hockey game against Western at 7:30. This is Engineering Night, so let's have a lot of you out there to enjoy the game. The LGMB will be there to provide their usual brand of entertainment. After the game, there will be free skating until 11 p.m., so bring your skates and take a turn around the ice with your friends.

Thursday has the first Toike Oike Gong Show and Tea Party. This will be held in SF1105 at 12:30. It will feature a little music, a little comedy, a little whatever and promises to be hilarious. Peter Kurpis has even promised to attempt his infamous blowfish routine for a large crowd. If you or your group has an act and would like to be in the show, details will be available from Ella in the Eng. Soc. office. There will be prizes for the best, worst and silliest performances by Labatt's. There will also be a special guest performer and a nominal admission charge.

After classes that afternoon there will be the Common Room Marathon and Relay. Through the co-operation of the various department clubs, a smoker will be held in each of the common rooms. This is your chance to see some of your friends in other years, talk to a prof or two and relax over a beer and a slice of pizza. Each club will be having its usual activities at the smokers but the Blue and Gold will be organizing the Marathon and Relay.

The marathon will be patterned along the same lines established last year and will consist of each contestant being provided with a map to follow. The one who makes his way to each common room location in proper order and completing the specified task will be declared the winner. There will be prizes for the entrants and last years winner, Andy Heit, with a time of 18 minutes challenges anyone to beat his record setting pace There will be an entry fee of $5 and entry forms will be available in the Eng. Soc. offices from Ella or your class rep. After the marathon is completed with a suitable rest period, the Club Challenge Marathon will get under way. This event will be a relay race with teams drawn from the clubs as arranged by the club chairmen. Each member of the relay team will be at a different common room and the race will consist of each member going to the next common room and passing the member of his team a secret object(s). The team that completes the relay out and back as specified in the rules will be declared the winner. The top three teams will be awarded prizes. Entry forms and official rules will be available from Ella. There will be an entry fee of $10.

Friday brings the end of Godiva Week and should be a fitting finale to the week's activities. At 12:30 in front of the Sandford Fleming building you are invited to congregate with the BNAD, the BFC and the Eng. Soc. Council members and graphically demonstrate your feelings and frustrations about the antiquated computer facilities that the best engineering school in Canada is expected to use. Am I talking about keypunches? I'll never tell. Come out and show your concern. Also, Godiva will be buried and laid to rest for another year with appropriate sadness and solemn music provided by the Lady Godiva Memorial Band and Gregorian Chant Society.

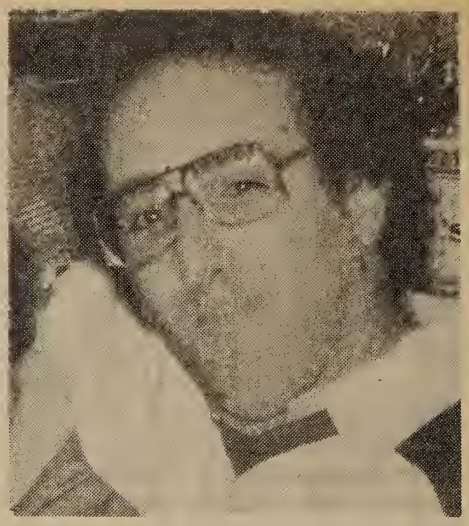
But, if you have a burial you must have a wake to send the spirit of the departed on her way, as well as to commiserate with friends and hoist a few glasses to her shade. The wake will be held in Wetmore Hall at New College as Roscoe's presents 'Godiva's Wake'. Avoid line-ups and come early. There will be a cover charge and proper I.D. will be required at the door.

Finally there are two other events which should be brought to your attention. First is the selection of an honourary Lady Godiva for '83.This young lady will be an engineer presently enrolled at Skule and will officiate at a number of the week's events. She will drop the puck at the ceremonial face off at the Blues Hockey game on Wednesday and help provide some spirit to the festivities. Unlike her famous predecessor she will be clothed during the whole week and will not ride a horse. A satin banner will proclaim her as the honourary representative of Godiva Week. So, if you have someone in mind for this honour - the first of its kind - then drop a short note off at the Eng. Soc. office to the attention of the Blue and Gold Chairman. The note should outline the qualifications of the Skule woman, her name, class, etc. It would be a good idea to talk to her first so that she is agreeable to being considered. The selection will be made at a secret meeting of the non-existent BFC ministers and their choice will be unveiled at Godiva's Resurrection.

Secondly, the first annual Godiva's Silver Treasure Hunt will take place during the week. This will consist of a set of time released clues as to the location of the treasure and the first team or person to correctly identify the location will be awarded the silver treasure at Godiva's wake. Details will be available from your class reps, Ella or June in the stores. Everyone has a fair chance of discovering the treaure which will prove to be well worth the effort to find it.

Well, that's what we have planned for you for Godiva Week '83 but it will only succeed with your support. Come out and have a good time at one event or at all- you won't be disappointed.

President's Message



Wayne Levin
Eng. Soc. President

Well, here we are back with our noses approaching the grindstone. Looking over the events of last term, I think that we had a good one. Our pubs have been profitable, with the revenues going to offset some of the events in second term. I hope that your holidays went well. I spent most of my time hopping from one engineering party to the next. Many notable things happened at these events. Particularly, one notable Cannon Editor (who shall remain nameless) dipped a little too deep into the suds; but I won't elaborate, as she was in good company. But now, unfortunately, we must sober up to a new term—at least until the death lists (or lottery as some prefer to call it) comes up. That's O.K. as there will be many an opportunity to once again drown your sorrows at some of our campus' famed pubs.

Speaking of consuming alcoholic beverages, not too far off is Godiva Week. Al Kasperski is adding a common, common room night. This will feature two boat races (long distance style competition), one being an individual effort, the other a relay team. Then there will be the usual (or rather unusual) chariot race, proclaimed by SAC (hiss) as U of T's best event of 80/81. Watch out for another new event which will let those wonderful people who think that computer cards and keypunch machines are the only way to go know that we don't think so.

On a serious note, be ready for the Special Incidental Payment review. This will come up in February. It is vital that you let your class representatives know just how you feel about the way your $100 has/is being spent. Should it continue? You decide and let your decision be known. A vote by the Engineering Society council will decide whether the payment will be made again next year.

In the meantime, work hard, play harder. To those of you in fourth year, remember, this is the last chance at having a good time as undergraduates.

Best of luck in '83.

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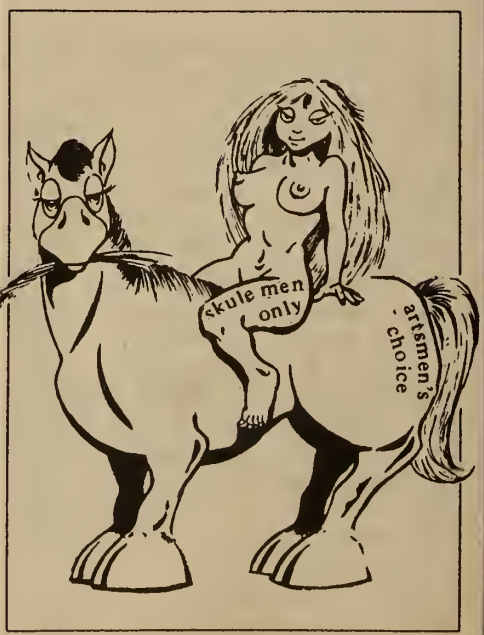
Friday 9 to 5 and no advisors. The total service cutback amounts to about 85%, an absolutely ridiculous amount given that the annex is the central computing facility for the university and is also the busiest. The result is the mess that engineering students are forced to use.

The cutbacks happened because the administration told UTCS to cut back their operating budget by about $1 million. In response, UTCS slashed user services and for some unknown reason the administration approved. To restore the services to even a moderately respectable level, UTCS insists that APSC pay extra for it.

What is the faculty policy about this? The current policy is for APSC to take over the responsibility for academic and research computing from UTCS. This would mean that the Faculty of Engineering would assume all the costs and responsibilities for running an engineering computer center. Currently, UTCS has the mandate and the funds to provide these services. From the students' point of view, the mandate has not been fulfilled and the faculty wants to assume it.

Where does this all leave the undergraduate student? Basically in the same state we are now. Can the Faculty provide the service that we need, that UTCS has not been able to provide? This is the question that we should consider closely, because the answer will stick with us for years to come.

Godiva Week



January 10-14

Benefit Replaces Controversy

Saudi Exchange Update

Margie Bawden
Mech 8T3

Last year, when the University of Toronto signed an agreement with Saudi Arabia to exchange technical knowledge, there was a big uproar in the press. A year later, the uproar has died away and the exchange program is moving ahead unnoticed by the public. The agreement is basically that the University of Toronto Engineering Faculty will help Saudi Arabia solve some of its technical problems by conducting seminars and/or short courses in Saudi Arabia for interested students and researchers. Some joint research projects may be undertaken as well.

To date, most of the exchange has involved work in the Civil and Chemical Engineering departments. Seminars have been given in Saudi Arabia by members of the U of T Engineering Faculty on Water Desalination and Water Resources. From these and future seminars, may develop research projects that would be carried out jointly by researchers at Toronto and at King Saud University in Saudi Arabia.

Dean Slemon, from U of T's Engineering Faculty, explained that this program will benefit both the parties involved. The Saudi Arabians will learn more of the technical knowledge they need while Canadians establish their reputation as technical experts. The King Saud University in Saudi Arabia is the centre of technological education and research in Saudi Arabia. At present, most of the teaching and research is done by expatriates from countries such as Egypt, Sudan, Pakistan and Jordan. As Saudi Arabians gain technical expertise they will be able to fill teaching and research positions in their own country. Canadians are, at the same time, breaking ground into a new field—that of marketing technology. Canada is a world leader in high technology and can take advantage of its position by moving now to establish a market for it. A link to Saudi Arabia, where there is a need for technological know-how, could become very advantageous as Canada moves into the high-tech market.

Similar Agreement with China

China has a similar agreement with Canada. Professors from China apply through the Chinese government to come to study in Canada. While in Canada, the Chinese learn some of our technology in return for free services on research projects. All living expenses while in Canada are covered by the Chinese governments. This link is nonfinancial but it has great benefits for Canada as well as China. China is fast becoming one of the great markets of the world. It has great resources in people and is already developing technology which is being exported profitably. Canada is getting in on the ground floor now by helping China to set up its own technology. Contracts are being considered with the Faculty of Management Studies and the Department of Industrial Engineering to teach the Chinese management skills. These programs are being arranged and funded by the Canadian Export Development Agency (CEDA).

Recently, four members of the U of T Engineering Faculty, Dean G.R. Slemon, Dr. G.W. Heinke (Civil Chairman), Dr. R.D. Ventor (Mechanical Chairman) and Professor H.L. Macklin (Civil), visited the King Saud University, the purpose of their visit was to explore possibilities for future research or teaching contracts. Dr. Heinke is the program coordinator. Civil Engineering has been involved in the exchange due to the nature of the technical needs in Saudi Arabia; however, it is possible that other departments such as Mechanical will become involved in exchange projects, too. While in Saudi Arabia, the four faculty members were also given tours of the construction site of the new King Saud University and a diplomatic complex. The construction in these two projects appeared to be the result of detailed planning and much hard work.

Saudi Arabians Catching Up

Saudi Arabians have begun the process of catching up to modern day technology and are going about it with a well-planned strategy. Canada and the Engineering Faculty at the University of Toronto can help Saudi Arabia achieve its goal while benefitting both financially and nonfinancially. Canada is changing too. Steps taken now to develop new technology and markets for the technology will eventually pay off in a healthier economy and more jobs for Canadians.

Engineering vs. Management Debate

Career Strategy

Brett Calder
Ind 8T3

What do you picture yourself doing five to ten years after graduation from the Faculty of Applied Science and Engineering? Research and development? Quality or test engineering? Computer engineering? Technical sales? Design? Management? In all probability, you will end up being a manager of one kind or another after a relatively short engineering career. The jump from engineering to management may be the first step upwards in your career. But is this what you planned for way back when you were an undergraduate?

As far as you, the undergraduate, are concerned, many questions should be raised considering the importance of decisions made while at university with respect to your future career. To facilitate discussion on this somewhat or perceived contentious issue of engineering vs. management, the Engineering Society is helping to organize a panel discussion entitled *Engineering vs. Management*. The panel, made up of three professional engineers from industry, will share their experience when presenting their various points of view.

Ms. Etta Wharton, P.Eng, is the Assistant to the Executive V.P. of Planning and Administration at Ontario Hydro and will represent the point of view that engineers should direct their efforts towards management. Mr. Pierre Girgis, P.Eng, is the Manager of the Waste Water Treatment Division at McLaren Plansearch Inc., and will argue that engineering and management are inseparable. Mr. Ivan Tavchar, P.Eng, is the Manager of Hardware Development at Control Data Canada Ltd., and will represent the point of view that opting for the engineering route is your most appropriate choice. Mr. Ian Robb, P.Eng, Regional Director—Human Resources, Lavalin Inc., will introduce each speaker who will talk for approximately 10 minutes each, and afterwards will moderate questions from the floor. Mr. Robb recently spoke to fourth year students at the job strategy seminar on *Professional Developments*, and since that time has been volunteering his time to help organize this event. Students are encouraged to attend loaded with questions and lunches—coffee and donuts will be served.

As an engineering student you are trained and are developing skills to be an engineer. You may feel you have no interest in management, and will leave that up to the MBA students and the Industrials. Or, you may be interested in pursuing an MBA (or transferring to Industrial) with ambitions of higher priced jobs and of being an executive. If this is the case, you would be well advised to consult the Faculty of Management Studies to see which options are available to you as an undergraduate for advanced standing against an MBA. Many, many U of T engineers have gone this route. J. Peter Gordon, P.Eng, President & CEO of STELCO Ltd. and Richard M. Thompson, P.Eng, President & CEO of the Toronto Dominion Bank, are two classic examples. But management can take on different forms, for instance management over industrial R&D projects. One such luminary is Dr. Donald A. Chisolm, President of Innovation and Development at Northern Telecom Ltd., who graduated from engineering at Toronto in 1949.

It is hard to overlook the fact that engineering and management is a good formula for success in Canada. It may be the high-tech society that is evolving, or it may be that there is not enough engineering to do in Canada. In either case, the challenge is there for either career choice that is made.

Rest your brain—
Exercise your taste buds

IN THE FIRST EVER

Beer Taste-Off

Beer from all breweries

Friday, February 4, 3:30p.m.
Sandford Fleming Cafeteria

Tickets from Ella in the Eng. Soc. offices

Jock Talk

Engineering Athletics

Not alot has been happening in the land of sweats since the time the Cannon last hit the presses. Many fall sports are now over, including, men's lacrosse, soccer and football and women's basketball, soccer, innertube waterpolo and football. However, there are still alot of teams still in the heat of regular season play. Teams that still need to be cheered on are men's waterpolo, hockey, basketball, volleyball and squash. The women's squash and swimming team are still looking for enthusiastic participants (no experience necessary - although it would help in the swim meet if you can float). The women's hockey and volleyball teams are also now into their season.

The men's senior hockey team won an engineering tournament in Guelph at the beginning of December. The first place medallion is hanging, in all its splendor on the E.A.A. bulletin board in the Eng. Soc. office for those interested.

There is a women's interfaculty swim meet the third week in January. Last year, the women gave an outstanding performance to win the meet and they are looking forward to an equally successful event this year. There is also a one day women's broomball tournament coming soon...so sharpen up your shoes.

For those of you who do not care to join a team but would like to keep busy there are new courses being offered at the Athletic Complex. There was a small newspaper published by the Recreation Department before the holidays which is still around and which lists all the courses offered. Participaction is the name of the game.

Ski Day promises to be a great event as it is rumoured that Osler has it's own private snow cloud (who said money can't buy everything?). Try-outs for the ski team which will compete in the inter-faculty ski meet in February will be held on this day.

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process. This facility will also allow the centre to produce prototypes for testing.

The new U of T Microelectronics Centre will be a boon to the campus since it will permit access to new and expensive, specialized equipment. The students will also benefit from the experience they will gain from exposure to this centre. In all, the centre should become an independent entity serving local industry and the University of Toronto.

The author would like to thank Professor Sedra for his help with this article.

Canadianize